



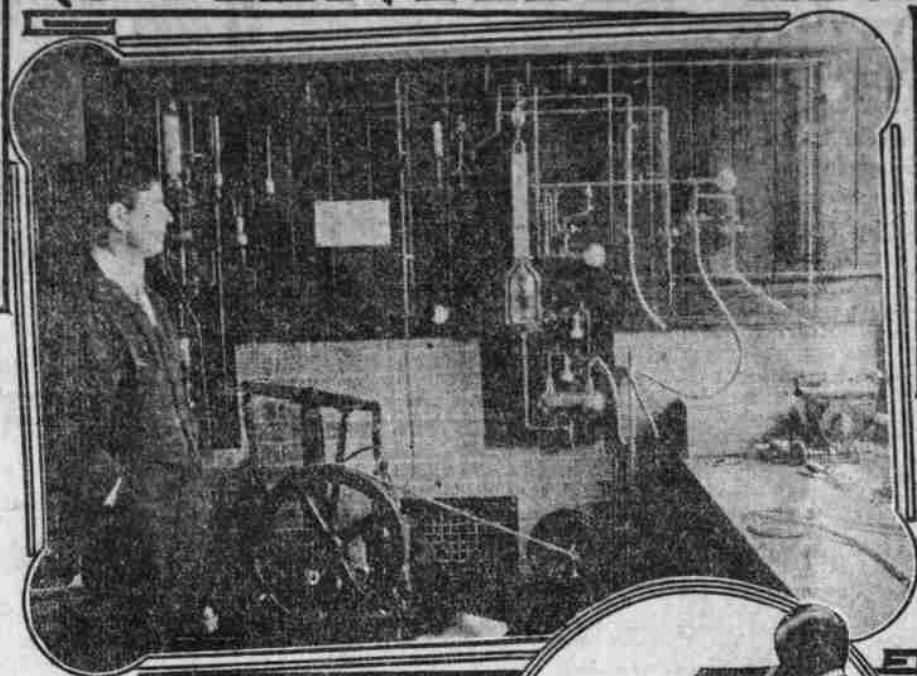
THE PULMOTOR — THE NEW APPARATUS INTRODUCED BY UNCLE SAM FOR RESUSCITATING LIFE

UNCLE SAM has very good reason to plume himself because of a number of important recent achievements that most distinctly make for progress. Some of the triumphs have taken the form of new inventions for doing things that were virtually impossible of accomplishment heretofore and others, none the less valuable, have been in the line of discovery of ways and means for doing things that have been done heretofore, but of doing them more easily, more quickly, more economically or more effectively than has heretofore been deemed possible.

The national government has been taking the lead in scientific, mechanical and engineering development to a constantly increasing extent in late years. For, of course, the reader will understand that in speaking of Uncle Sam's current triumphs in the field of invention and experiment, reference is made not to the federal government as represented by its own experts and employees. Now the national government has always been a contributor to the cause of science and invention, there being dual reasons for its activity in such direction. On the one hand the central government, with paternal instinct, has been bound to contribute in every way to the well-being of the whole people and as is well known such benefit is more often than not conferred through the instrumentality of scientific discoveries and inventions. Obviously then it is up to Uncle Sam to foster Yankee ingenuity by every possible means.

Yet the second incentive to federal activity in this broad field has been even more of a spur than the first. It arises from the fact that the national government is, to an extent

UNCLE SAM'S LATEST SCIENTIFIC TRIUMPHS

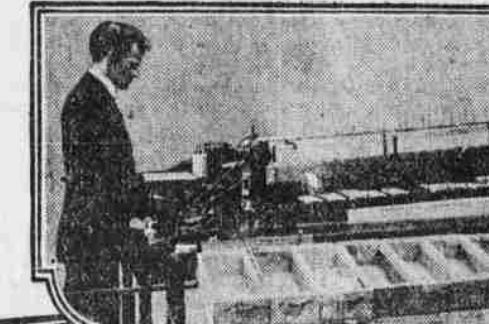


NEWLY INVENTED VACUUM GAUGE AT THE U.S. BUREAU OF STANDARDS

but this does not prevent the magnet from doing stunts of great popular interest now and then. When the magnet is charged with its full electric current of 125 amperes a piece of metal, weighing hundreds of pounds might be suspended at the pole pieces and the leakage, that is the "stray magnetic field" way out at the ends of the magnet is sufficient to support in all sorts of positions wrenches and bars of iron weighing as much as five or six pounds apiece, whereas wire nails in series of half a



"RECEIVING END" OF A NOVEL NEW STYLE MAIL CONVEYOR



CARD-SORTING MACHINE JUST INVENTED FOR THE U.S. CENSUS

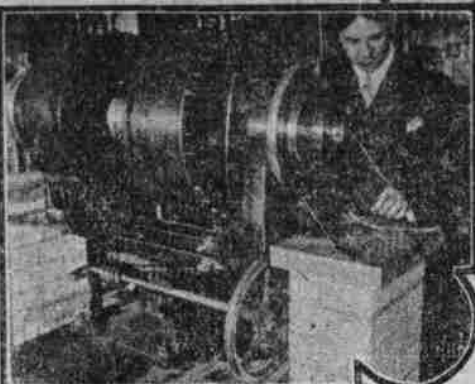
dozen or more, end to end, are supported in horizontal position. One of the most amazing tricks performed by the magnet is to support a glass dish by means of a small piece of iron placed inside the dish, the power of magnetic attraction being exerted upon the iron through the thickness of the layer of glass. Another impressive illustration of the power of this monster magnet is afforded when a handful of nails are thrown in the air perhaps three or four feet away from the magnet. As though whisked in by an invisible hand and almost more quickly than the eye can follow the operation, these nails are one and all drawn to the highly magnetized surface.

This new magnet, a world's record breaker in size as well as in power, was constructed specially for the United States government by a firm of instrument makers in Switzerland. The circumstances connected with the designing of the magnet illustrate how great minds may run in the same direction. Mr. Frederick Bates, the United States government expert who is at the head of the division of polarimetry at the bureau of standards and working in conjunction with other government scientists, just worked out the detailed plans for such a magnet when he discovered that the foreign instrument makers who ultimately built this one for our government had been covering the same ground at the same time, each inventor unconsciously of the activities of his rival on the opposite side of the Atlantic.

Perhaps the most unusual attribute of this magnet is that it is made available for continuous use, this being accomplished by replacing ordinary insulated wires such as are commonly used with copper tape. This copper tape is surrounded by insulating oil. Through this oil there are run coils of copper tubing about one-half inch in diameter and through this tubing cold water is circulated to carry off the enormous heat which is developed. In the same room with the new magnet is a yet newer invention—the product of government scientists—which promises great things. It is known as a vacuum gauge and it will enable more minute and more accurate measurement than has heretofore been possible in the case of a vacuum.

One of the most notable of Uncle Sam's scientific triumphs of the present year is the new system of multiplex telephony mentioned above and which by its disclosure of a method of transmitting a number of telephone messages simultaneously over the same wire is expected to greatly reduce the cost of long distance telephone conversation. In connection with the development of this new form of telephony which will make one wire do the work of ten, Major Squier and his associates have carried on some experiments which, though originally intended only as a means to an end, now promise to have a distinct value of their own in disclosing the possibilities of transmitting music by telephone.

The music of a phonograph or graphophone



THE MOST POWERFUL MAGNET IN THE WORLD

air-tight connection between the human lungs and the mechanical lungs of the machine. It is said of this new invention that it will "make a corpse breathe," meaning that it will compel the diaphragm to move in a body in which life is wholly extinct. The new device costs \$800, making it one of the world's most expensive pieces of rescue equipment, as it is certainly one of the most effective. Comparatively little experience is required for its successful operation.

Government officials have within the past few months invented several new machines for quickening and cheapening the manufacture of paper money and postage stamps and whereas these inventions may not find very extensive adoption outside the government workshops, they will exert an important influence there. Among these new inventions is a remarkable combination machine which at one operation stamps the successive serial number on each bank note, impresses in color the official seal, cuts the sheets of money into individual notes and counts the bills—tasks that formerly required as many different machines and an immense expenditure of time. Another new invention is a machine which automatically trims at one stroke all four edges of a sheet of bank notes. A third new invention is a machine for automatically wetting the sheets of paper used in printing our currency—a chore that had for-

was the particular form of melody transmitted and the results were really surprising in many respects. For one thing the music as heard at the other end of the line was remarkably clear and sweet. Indeed it was seemingly more perfect tone production than that obtainable under any other conditions inasmuch as the telephone served to entirely eliminate the "needle nose," the one suggestion of the mechanical which talking machine inventors have never been able to entirely eliminate. It is believed that this disclosure of the possibilities of transmitting music by phone will ultimately enable people to enjoy concerts by the best vocal and instrumental talent when seated in their own homes. This would, of course, prove an especial boon in the case of suburbanites and residents of the rural districts where the use of the telephone has increased so tremendously in recent years. In the experiments with multiplex telephony the graphophone music was employed to still further demonstrate the possibility of using a single wire for the transmission of various messages simultaneously, each independent of the others. For instance, on one occasion Caruso, by means of a "talker," sang on the line while "The Charge of the Light Brigade" (as recited into a separate transmitter close at hand) was carried over the same wire at the same time without in any way interfering with the famous tenor's voice.

Of Uncle Sam's recent innovations in technical equipment none bids fair to ultimately work greater wonders than the lately introduced Pulmotor. The Pulmotor is a delicate adjusted machine that occupied a portable case not much larger than the ordinary dress suit case, and its function is to bring back to life persons supposed to be dead. The government provided the first of these new machines for the use of the newly established United States bureau of mines in its work of rescuing men overcome by the poisonous gases in coal mines, but the advent of the invention is opening up life-saving possibilities in other fields, as, for instance, at bathing beaches and in city hospitals—in short in any case where death is threatened through the filling of the lungs with gas or water.

The Pulmotor is, in effect, an automatic breathing machine, its function being to draw the poisonous gases out of the lungs and to force into the lungs in turn the life-giving oxygen. The mechanism includes a cylinder in which oxygen is stored under pressure, a blowing and suction valve actuated by two accordion bellows, and a hood or mask which fits over the mouth and nostrils of the patient, making an

merly to be done by hand—and a fourth invention is a mechanism which neatly arranges in coils the postage stamps which are to be placed on sale in vending or stamp-selling machines which it is planned to introduce in this country following the example of Germany and other foreign countries.

Much has been printed from time to time regarding the "machines that almost think" invented by the mechanical experts of the United States census bureau to aid Uncle Sam in the big task of counting noses. However, there is one invention, newer than any of the others regarding which little has been said. This is the automatic card-sorting machine, the function of which is to sort mechanically the ninety odd million cards representing the people of the United States—for, under our present system of card-indexing the country the census office has on file a bit of pasteboard to represent every man, woman and child in the republic. The new sorter sorts cards at a speed of from 300 to 325 per minute, sorting the cards into thirteen different drawers. The machine is operated by electricity and the sorting is done through the medium of sensitive needles which seek out the holes which have previously been punched in each card to record biographical facts and distribute the cards according to the location of these holes.

Uncle Sam's greatest business institution, the postoffice department, has lately fostered its share of new inventions aside from the stamp-vending machines with which it has long been experimenting. The late novelties include an electric canceling machine for canceling the stamps on letters and postmarking the envelopes; a trolley system for handling mail in city postoffices and a belt conveyor system for the same purpose. Two clerks in the postoffice department lately invented a machine that cuts down work 20 per cent. in the money order branch of our postal headquarters, through its facility in automatically printing the money order fees as the amounts of the paid money orders are recorded for auditing purposes. And finally, the department is on the eve of perfecting a remarkable new machine for the use of every postmaster throughout the country who conducts a branch of the new postal savings bank. This last-mentioned invention is suggestive in appearance of the familiar cash register and its function is to mechanically fill out the deposit slips of the lately-established "poor man's bank," a work that had formerly to be done by hand. Not only will this new mechanical tollie save time and labor, but it will make dishonesty virtually impossible on the part of any employee handling postal bank deposits.

STEEL TRUST PROFITS WICKERSHAM FAILS IN DUTY

Attorney General Consistently Treats Trust Lawbreakers as Favored Class of Criminals.

Somewhat like three years must pass before the suit brought by Attorney General Wickersham against the lumber trust can be finally settled in the court of last resort. When the last word is uttered by the Supreme court the lumber trust stock may take a jump upward as Standard Oil shares did on the curb when the decision against it was announced. And as in the Standard case no individual personally guilty of the crime alleged against the lumber trust corporation will go to jail.

This is making a joke of a criminal statute strong enough to stop conspiracies in restraint of trade—when honestly enforced. Mr. Wickersham's inexplicable refusal to indict the violators and put them in jail brings the Sherman law into further contempt from the lawmakers. Every time he files one of his perfunctory actions for dissolution Wall street shakes its sides with mirth. Injunctions against such criminals are as ridiculously ineffective as injunctions would be against counterfeiting and burglary.

The Sherman law is a penal statute, and only by enforcing its severest penalties can any respect be gained for it. When the attorney general fails to prosecute criminals by proceeding personally against them he violates the spirit of his oath of office. It then becomes the duty of the president of the United States to dismiss him from office and appoint an attorney general who will no longer treat the trust lawbreakers as a favored class of criminals.

It was well known then that the 500 millions of United States Steel corporation common stock and a considerable portion of the 500 millions of preferred stock represented no tangible value in property.

With these facts well known, the freedom of the United States Steel corporation from congressional investigation and legal prosecution during the past ten years is a mystery. An explanation for it is the policy of candor and publicity adopted by E. H. Gary, the chairman of the executive committee of the concern, early in its career, and the efforts that have been made to build up the properties of the corporation so that they would more nearly approximate the capitalization. Several hundred millions of earnings have been put into the new properties and an enormous increase in the value of the corporation's coal lands and iron mines has occurred, so that the actual value of the corporation's properties is much closer to its capitalization today than ten years ago.

But the fact cannot be overlooked that this result has been possible only because the steel business has yielded excessive profits. The material capitalization of the trust has necessitated an unfair tax on consumers of iron and steel, to pay dividends and interest and to build up the value of the properties.

Lumber and Reciprocity. Scratch a Russian, said Napoleon, and find a Tartar. Scratch a "farmer" opposed to reciprocity at Washington nowadays and find the lumber trust. The duties on lumber and wood which we remit under the agreement with Canada amounted last year to \$1,223,530. A combination in restraint of trade, a monopolizer of markets, a blackletter, an extortioner and a conspirator, as this trust is described in the arraignment just filed by Attorney General Wickersham, is not going to surrender the advantage which it derives from this unnecessary tax except under compulsion. It is this forestaller and engrosser which speaks through most of the "farmers" who have been heard at Washington.

Commissioner of Corporations Smith recently reported that 155 holders, most of them in combination, control one-half of all the privately owned timber in the United States. It was these gentlemen or their agents who at an expense of \$100,000 "put over" Mr. Lorimer in Illinois. Are the other senators who are trying to defeat reciprocity doing their best to "put one over" for the lumber trust?—New York World.

Anybody Proud of the Senate? It may be wondered whether any considerable element of the Republican party of the country feels any sense of pride or satisfaction in the present course of the majority in the national senate. Here is "the greatest deliberative body in the world" fooling away its time, obstructing legislation, defying the advice and wishes of the president and doing nothing.

With promptitude and even enthusiasm, the house of representatives has attended to the matters covered by the president's call for the extra session. It has gone further, in initiating and carrying to completion the consideration of matters and measures for the good of the country.

But that senate, controlled by members of the party which elected the president, persists in ignoring and opposing the very matters for the consideration of which it was called to meet.

Is anybody in all this wide republic proud of that aggregation of alleged statesmen?

Work of Special Session. There is every reason to believe that the Canadian treaty will be passed before adjournment comes, and it seems no less certain that the constitutional amendment for the direct election of senators will pass the senate at this session. The enactment of two such measures as reciprocity and the popular election of senators will make the special session well worth while, even if nothing more is accomplished in the way of general legislation.

Mission of Democracy. The purpose of Democracy, as defined by Woodrow Wilson, is not to upset things but to set things right, a definition that should be more generally understood among voters who see many things that ought to be set right but don't see any particular need for a general upsetting.

Ex-Senator Aldrich is said to have "readjusted his tariff views." The public will rejoice that he is out of office. It can't stand another upset by reason of a still higher tariff.

Has a Parrot That Thinks

Writer, Telling of the Intelligence of Birds, Relates How a Pet Asked for a Certain Seed.

M. Pierre Hachet Souplet, writing on the intelligence of birds and animals, relates a remarkable accomplishment on the part of a parrot. He admits that the bird was an exceptionally clever specimen, and he considers its achievement indicates the

high-water mark of possibilities in this direction so far as parrots are concerned.

He had taught Polly to use the words "cupboard" and "ladder," and as he climbed the ladder he had succeeded in inducing the bird to articulate the word "climb." Every day when the bird was brought into the laboratory a small cupboard was opened and Polly helped herself to hempseed. One

day, however, instead of the cupboard being placed where she could reach it, it was hauled up near the ceiling, and the ladder was placed among several other articles in the corner of the room.

The question to be decided was whether the bird, seeing that the cupboard was out of M. Souplet's reach, would have sufficient intelligence to use words it knew in their proper sequence. The first day's experiment was a failure. The parrot screamed "Cupboard-cupboard," beating its

wings and biting the bars of its cage in anger, but it got no farther. That day the bird received millet, which it did not care for; the hempseed, which it was very fond of, being locked up in the cupboard.

Next day Polly was in a greater temper than ever, and after a desperate effort to break through the bars of her cage she finally caught sight of the cupboard near the ceiling. Instantly came the words, "Ladder, climb-cupboard," and Polly, having learned her lesson, the cupboard was

brought down and she was rewarded with some hempseed. M. Hachet Souplet looked upon this incident as a proof of the association of ideas in the bird's mind, as no one had ever taught the parrot the phrase she created.

No Use to Her. "Can't I sell you an electric flat-iron?" said the agent.

"You cannot," said she. "When I have trouble with my husband a lot of good a flatiron tied to an electric jet would be to me."

"What is the senate going to do?" inquires a contemporary. That's just what the senate would like to know.

"The time is coming when an honest man will not be able to succeed in business in this country." "What do you call succeeding in business?" "Why—er—keeping a high tariff on the things you are producing."—Chicago Record-Herald.

That report that J. Pierpont Morgan used the influence of the United States government to further his foreign financial operations is somewhat like an earlier news item to the effect that the Dutch had captured Holland.